MATH 1010 Final
Fall Semester 2005
Version J

Name: _____ **Instructor: _____**

ID Verification: _____

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Factor the polynomial completely.

1) $3y - 27 + xy - 9x$

A) $(y - 9)(3 + x)$ B) $(x - 9)(y + 3)$ C) $(x - 9)(3y + x)$ D) $(y - 9x)(3 + x)$

Find the indicated value.

2) Find $f(-2)$ when $f(x) = 5x^2 + 5x - 7$

A) 17 B) 20 C) 23 D) 3

Write an equation of the circle with the given center and radius.

3) $(-4, 6)$; 6

A) $(x + 6)^2 + (y - 4)^2 = 6$ B) $(x - 4)^2 + (y + 6)^2 = 36$
C) $(x + 4)^2 + (y - 6)^2 = 36$ D) $(x - 6)^2 + (y + 4)^2 = 6$

Perform the indicated operation.

4) $(7 + 5i) - (-3 + i)$

A) $4 + 6i$ B) $10 + 4i$ C) $10 - 4i$ D) $-10 - 4i$

Solve the absolute value equation.

5) $|5x + 9| + 6 = 9$

A) $-\frac{2}{3}, -\frac{4}{3}$ B) $-\frac{6}{5}, -\frac{12}{5}$ C) $\frac{6}{5}, \frac{12}{5}$ D) $\varnothing$

Solve the system.

6)
$$\begin{cases} x + y + z = -1 \\ x - y + 3z = 1 \\ 5x + y + z = 15 \end{cases}$$

A) (-2, 4, -3) B) (4, -3, -2) C) (-2, -3, 4) D) ∅

Solve the equation.

7) $\frac{1}{x} + \frac{1}{x - 7} = \frac{x - 6}{x - 7}$

A) 7, 1 B) 7, -1 C) -7, 1 D) 1

Find the slope of the line that goes through the given points.

8) (2, -3), (-9, 7)

A) $\frac{11}{10}$ B) $-\frac{11}{10}$ C) $-\frac{10}{11}$ D) $\frac{10}{11}$

Use radical notation to write the expression. Simplify if possible.

9) $5x^{3/5}$

A) $5\sqrt[5]{x^3}$ B) $\sqrt[3]{5x^5}$ C) $\sqrt[5]{5x^3}$ D) $\sqrt[5]{125x^3}$

Divide.

10) $(-4x^3 - 16x^2 - 9x + 12) \div (2x + 3)$

A) $-2x^2 - 5x + 3$ B) $-2x^2 - 5x + 3 + \frac{3}{2x + 3}$

C) $-2x^2 - 5x + 3 + \frac{6}{2x + 3}$ D) $x^2 + 3 + \frac{-5}{2x + 3}$

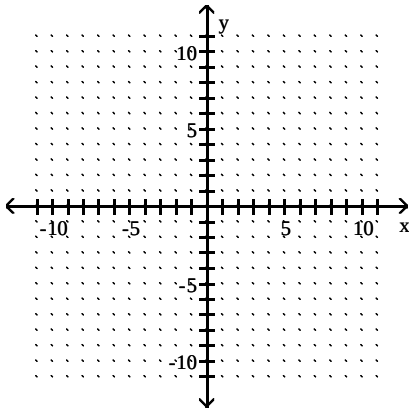
Rationalize the denominator and simplify.

11) $\frac{5}{\sqrt{10} + 3}$

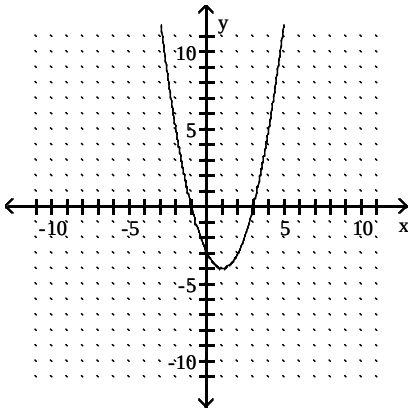
A) $5\sqrt{10} + 15$ B) $5\sqrt{10} - 15$ C) $\frac{5\sqrt{10} + 15}{20}$ D) $5\sqrt{10} - 3$

Sketch the graph of the quadratic function. Give the vertex and axis of symmetry.

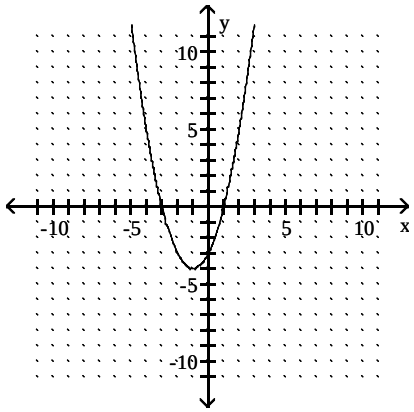
12) $f(x) = (x + 1)^2 - 4$



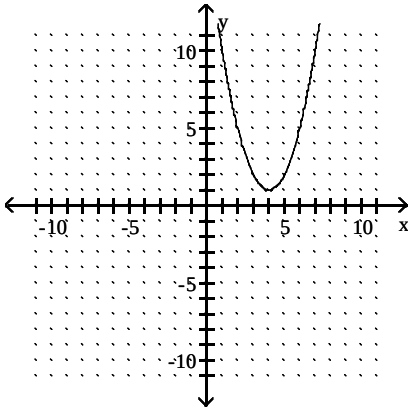
A) vertex (1, -4); axis x = 1



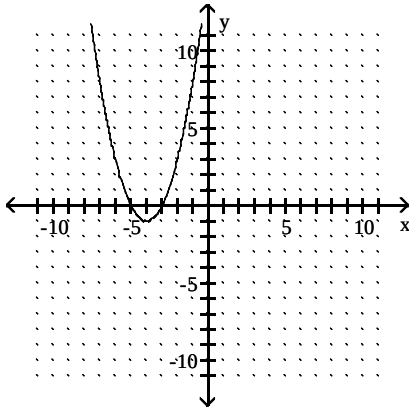
B) vertex (-1, -4); axis x = -1



C) vertex (4, 1); axis x = 4



D) vertex (-4, -1); axis x = -4



Divide. Simplify completely.

13) $\dfrac{x^2 - 11x + xy - 11y}{10x^2 - 10y^2} \div \dfrac{x - 11}{6x - 6y}$

A) $\dfrac{6(x^2 - 11x + xy - 11y)}{10(x + y)(x - 11)}$

B) 1

C) $\dfrac{3}{5}$

D) $\dfrac{(x - 11)^2}{60(x - y)^2}$

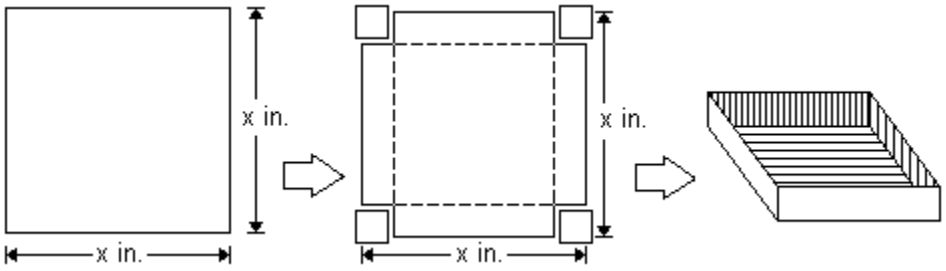
Write an equation of the line with the given slope and containing the given point.

14) Slope 2; through (-2, -7)

A) y = 2x + 3 B) y = 2x - 3 C) y + 7 = x + 2 D) y + 7 = mx + 2

Solve.

15) Suppose that an open box is to be made from a square sheet of cardboard by cutting out 3-inch squares from each corner as shown and then folding along the dotted lines. If the box is to have a volume of 12 cubic inches, find the original dimensions of the sheet of cardboard.

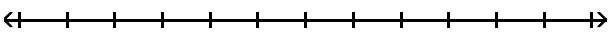


A) $2\sqrt{3}$ in. by $2\sqrt{3}$ in. B) 8 in. by 8 in.

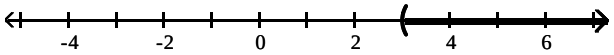
C) $\sqrt{2}$ in. by $\sqrt{6}$ in. D) 2 in. by 2 in.

Solve the compound inequality. Graph the solution set.

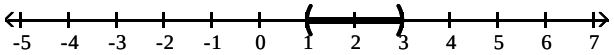
16) -5x > -15 and x + 5 > 6



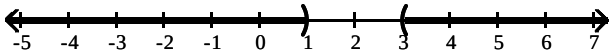
A) (3, ∞)



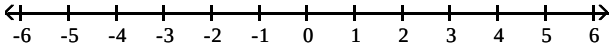
B) (1, 3)



C) (-∞, 1) ∪ (3, ∞)



D) ∅



Factor the polynomial completely.

17) $343x^3 - 729$

A) $(343x - 9)(x^2 + 63x + 81)$

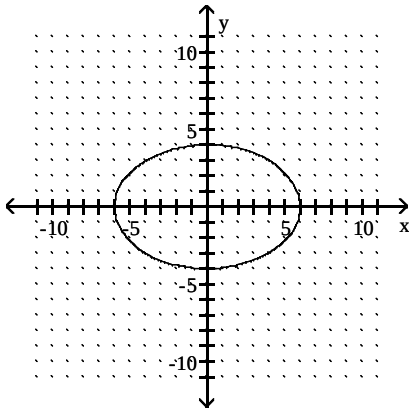
B) $(7x + 9)(49x^2 - 63x + 81)$

C) $(7x - 9)(49x^2 + 63x + 81)$

D) $(7x - 9)(49x^2 + 81)$

Find the domain and the range of the relation. Use the vertical line test to determine whether the graph is the graph of a function.

18)



A) domain: [-6, 6]
range: [-4, 4]
function

B) domain: [-4, 4]
range: [-6, 6]
function

C) domain: [-6, 6]
range: [-4, 4]
not a function

D) domain: [-4, 4]
range: [-6, 6]
not a function

Factor the polynomial completely.

19) $64x^2 + 48x + 9$

A) $(8x + 3)(8x - 3)$

B) $(8x - 3)^2$

C) $(64x + 1)(x + 9)$

D) $(8x + 3)^2$

Add.

20) $9\sqrt{6} + 4\sqrt{54}$

A) $-21\sqrt{6}$

B) $-6\sqrt{6}$

C) $13\sqrt{6}$

D) $21\sqrt{6}$

Solve.

21) A painter can finish painting a house in 4 hours. Her assistant takes 6 hours to finish the same job. How long would it take for them to complete the job if they were working together?

A) 3 hours

B) $2\frac{2}{5}$ hours

C) $\frac{5}{12}$ hours

D) 5 hours

Solve for x.

22) $\log_3 x = -2$

A) $\frac{1}{8}$ B) -6 C) $\frac{1}{9}$ D) 1

Solve.

23) $\sqrt{4x - 8} = 5 - x$

A) 3 B) 11 C) 3, 11 D) $\varnothing$

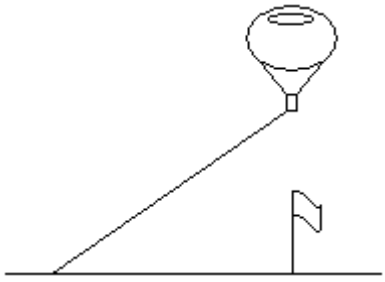
Simplify.

24)
$$\frac{\frac{3}{x + 5} + \frac{9}{x + 7}}{\frac{2x + 11}{x^2 + 12x + 35}}$$

A) 6 B) 12 C) $\frac{1}{6}$ D) 2x + 11

Solve.

25) A balloon is secured to rope that is staked to the ground. A breeze blows the balloon so that the rope is taut while the balloon is directly above a flag pole that is 30 feet from where the rope is staked down. Find the altitude of the balloon if the rope is 100 feet long.



A) $10\sqrt{91}$ ft B) $10\sqrt{109}$ ft C) $\sqrt{70}$ ft D) $\sqrt{910}$ ft

Solve the equation.

26) $6x^2 + 10x = -3$

A) $\frac{-5 - \sqrt{43}}{6}, \frac{-5 + \sqrt{43}}{6}$

B) $\frac{-10 - \sqrt{7}}{6}, \frac{-10 + \sqrt{7}}{6}$

C) $\frac{-5 - \sqrt{7}}{6}, \frac{-5 + \sqrt{7}}{6}$

D) $\frac{-5 - \sqrt{7}}{12}, \frac{-5 + \sqrt{7}}{12}$

Solve the formula for the specified variable.

27) $P = 2L + 2W$ for W

A) $W = \frac{P - L}{2}$ B) $W = P - L$ C) $W = \frac{P - 2L}{2}$ D) $W = d - 2L$

Find an equation of the line. Write the equation using function notation.

28) Through (8, 3); parallel to $f(x) = 5x - 5$

A) $f(x) = 5x - 37$ B) $f(x) = 5x + 3$ C) $f(x) = 5x + 43$ D) $f(x) = -5x - 37$

Solve the equation.

29) $3(5x + 4) + 13 = 12x - 2$

A) 9 B) -9 C) -27 D) -81

30) $2^{(12 - 4x)} = 16$

A) 3 B) 2 C) 1 D) -2

Answer Key
Testname: MATH1010 FINAL F05 FORMJ

1) A
2) D
3) C
4) B
5) B
6) B
7) D
8) C
9) A
10) B
11) B
12) B
13) C
14) B
15) B
16) B
17) C
18) C
19) D
20) D
21) B
22) C
23) A
24) A
25) A
26) C
27) C
28) A
29) B
30) B